



Spectral Gamma-Ray Borehole
Log Data Report

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Borehole

11-01-07

Log Event A

Borehole Information

Farm : <u>AX</u>	Tank : <u>AX-101</u>	Site Number : <u>299-E25-103</u>
N-Coord : <u>41,692</u>	W-Coord : <u>47,500</u>	TOC Elevation : <u>680.00</u>
Water Level, ft :	Date Drilled : <u>1/31/1975</u>	

Casing Record

Type : <u>Steel-welded</u>	Thickness : <u>0.280</u>	ID, in. : <u>6</u>
Top Depth, ft. : <u>0</u>	Bottom Depth, ft. : <u>100</u>	

Borehole Notes:

This borehole was drilled in January 1975. It was driven to 100 ft with 6-in. casing. The casing thickness is presumed to be 0.280 in., on the basis of the published thickness for schedule-40, carbon-steel pipe. The zero depth reference is the top of the borehole pipe, which is even with the ground surface.

Equipment Information

Logging System : <u>1</u>	Detector Type : <u>HPGe</u>	Detector Efficiency: <u>35.0 %</u>
Calibration Date : <u>04/1996</u>	Calibration Reference : <u>GJPO-HAN-5</u>	Logging Procedure : <u>P-GJPO-1783</u>

Log Run Information

Log Run Number : <u>1</u>	Log Run Date : <u>08/21/1996</u>	Logging Engineer: <u>Alan Pearson</u>
Start Depth, ft.: <u>0.0</u>	Counting Time, sec.: <u>100</u>	L/R : <u>L</u> Shield : <u>N</u>
Finish Depth, ft. : <u>5.5</u>	MSA Interval, ft. : <u>0.5</u>	Log Speed, ft/min.: <u>n/a</u>

Log Run Number : <u>2</u>	Log Run Date : <u>08/22/1996</u>	Logging Engineer: <u>Alan Pearson</u>
Start Depth, ft.: <u>99.5</u>	Counting Time, sec.: <u>100</u>	L/R : <u>L</u> Shield : <u>N</u>
Finish Depth, ft. : <u>4.5</u>	MSA Interval, ft. : <u>0.5</u>	Log Speed, ft/min.: <u>n/a</u>



Borehole

11-01-07

Log Event A

Analysis Information

Analyst : E. Larsen

Data Processing Reference : P-GJPO-1787

Analysis Date : 10/31/1996

Analysis Notes :

This borehole was logged in two log runs. The pre- and post-survey field verification spectra met the acceptance criteria established for the peak shape and system efficiency, confirming that the SGLS was operating within specifications. The energy calibration and peak-shape calibration from these verification spectra were used to establish the channel-to-energy parameters used in processing the spectra acquired during the logging operation.

Casing correction factors for a 0.280-in.-thick steel casing were applied during analysis.

The man-made radionuclides Cs-137, Co-60, and Eu-154 were identified in this borehole. The presence of Cs-137 contamination was noted continuously from the ground surface to a depth of 13 ft. Detectable quantities (less than 0.5 pCi/g) were also noted at 14 ft, 17 ft, 20 ft, 22.5 ft, and 68 ft and from 99 to 99.5 ft. The maximum Cs-137 concentration in the near-surface continuous zone was about 11 pCi/g. Detectable concentrations of Co-60 and Eu-154 were encountered between 3.5 and 5.5 ft. The highest concentrations of Co-60 and Eu-154 within this zone were 0.3 and 1.7 pCi/g, respectively. The MDL was about 0.1 pCi/g for Co-60 and 0.3 pCi/g for Eu-154.

The presence of Co-60 was indicated by the 1333-keV spectral peak. The presence of Eu-154 was indicated by the 1275-keV spectral peak.

In the near-surface interval of this borehole (between 0.5 and 6 ft), it was not possible to identify the 609-keV peak used to determine the U-238 concentration because high gamma-ray activity associated with the nearby Cs-137 peak (662 keV) created an elevated Compton continuum near the 609-keV peak.

Additional information and interpretations of log data are included in the main body of the Tank Summary Data Report for Tank AX-101.

Log Plot Notes:

Separate log plots show the man-made radionuclides (Cs-137, Co-60, and Eu-154) and the naturally occurring radionuclides (KUT). The natural radionuclides can be used for lithology interpretations. The headings of the plots identify the specific gamma rays used to calculate the concentrations.

Uncertainty bars on the plots show the statistical uncertainties for the measurements as 95-percent confidence intervals. Open circles on the plots give the MDL of a radionuclide, which represents the lowest concentration at which positive identification of a gamma-ray peak is statistically defensible.

A combination plot includes the man-made and natural radionuclides, in addition to the total gamma derived from the spectral data and the Tank Farms gross gamma log. The gross gamma plot displays the latest available digital data. No attempt has been made to adjust the depths of the gross gamma logs to coincide with the SGLS data.